mineral fiber-containing absorbers that have been used until now and that are suspected of being carcinogenic according to TRGS 905.

Example 3

92 parts by weight expanded glass (Mizziglas, Mizzi AG) are mixed with 8 parts by weight sodium tetrasilicate dissolved in water (molar modulus 4.0) and compacted with a pressure of 5 bar. With a sintering temperature of 850 °C a pressure-loaded insulation material with a closed-pore structure is formed. These products with a bulk density of about 500 kg/m^3 have a mostly closed-cell structure, which leads to high compressive strength of 10 MPa. At the same time, heat conductivities of 0.13 W/mK are achieved. These construction materials are primarily suited to produce pressure-loadable, heat-insulating components, for example, support elements, as used in the production of balconies or verandas.

Example 4

91 parts by weight of expanded glass granulate (Poraver, 1 to 2) are mixed with 9 parts by weight sodium water glass and filled into molds. Shaping occurs by an axial pressing process with a pressure of 0.4 bar. In conjunction with drying at 80 °C, sintering occurs at 760 °C in air. The material so produced has a bulk density of about 300 kg/m^3, so that a heat conductivity λ of 0.078 W/mK and a compressive strength of about 1 MPa are obtained. Areas in which the insulation must assume no load-bearing function, like parts of wood scaffolding structures, frameworks, etc., represent an ideal area of application for such materials.

Claims

1. Molded body from a lightweight substance formed from a lightweight aggregate and a sintering auxiliary, characterized by the fact that it is formed from a sintered product containing 60 to 95 wt% of a lightweight aggregate with 40 to 5 wt% of a water-soluble alkali silicate.

2. Molded body according to Claim 1, characterized by the fact that the lightweight aggregate is bonded in network fashion to produce its essential properties.

3. Molded body according to Claim 1 or 2, characterized by the fact that the dry bulk density lies in the range from 150 to 750 kg/m^3.

4. Molded body according to at least one of the Claims 1 to 3, characterized by the fact that the compressive strength lies in the range from 0.1 to 15 N/mm^2.

5. Molded body according to at least one of the Claims 1 to 4, characterized by the fact that the sintered product is formed from 93 to 80 wt% of lightweight aggregate and 7 to 20 wt% of water-soluble alkali silicates.

6. Molded body according to at least one of the Claims 1 to 5, characterized by the fact that the lightweight aggregate is chosen from scrap glass, perlites, expanded clay, expanded glass, vermiculites, natural and metallurgical pumice, cenospheres and kieselgühr.

7. Molded body according to at least one of the Claims 1 to 6, characterized by the fact that the water-soluble silicate is chosen from alkali silicates, especially water glass, especially sodium water glass and potassium water glass.

8. Process for production of a molded body according to at least one of the Claims 1 to 7, characterized by the fact that the lightweight aggregate and the binder are subjected to a shaping process after mixing and sintered at 400°C to 1000°C over a period from 0.1 h to 5 h.

9. Process according to Claim 8, characterized by the fact that the dry bulk density and/or compressive strength is adjusted as a function of the lightweight aggregate and the process parameters during sintering.

10. Process according to Claim 8 or 9, characterized by the fact that drying at 50°C to 95°C is carried out after shaping and before sintering.

11. Process according to at least one of the Claims 8 to 10, characterized by the fact that the sintering process is conducted at 550 to 850°C.

12. Process according to at least one of the Claims 1 to 9, characterized by the fact that sintering occurs during a period from 0.1 h to 0.5 h.

13. Use of molded bodies according to at least one of the Claims 1 to 7 as insulation molded bodies.

14. Use of the molded bodies according to at least one of the Claims 1 to 7 as construction material, especially as bricks.

15. Use of the molded bodies according to at least one of the Claims 1 to 7 as furnace lining.

16. Use of the molded bodies according to at least one of the Claims 1 to 7 as bricks for formation of exhaust installation.

17. Use of the molded bodies according to at least one of the Claims 1 to 7 for technical sound protection in interior rooms.

18. Use of the molded bodies according to at least one of the Claims 1 to 7 for sound-absorbing segments for fixed passageways of rail vehicles.

19. Use of the molded bodies according to at least one of the Claims 1 to 7 as fireproofing elements.

20. Use of the molded bodies according to at least one of the Claims 1 to 7 as sound absorbers in exhaust lines.

New Patent Claims

1. Molded body from a lightweight substance formed from a lightweight aggregate and a sintering auxiliary, characterized by the fact that the lightweight substance is a sintered product obtained by mixing of 60 to 95 wt% of a lightweight aggregate, chosen from perlites, expanded clay, expanded glass, vermiculites, cenospheres and kieselguhr and/or their mixtures with 40 to 5 wt% of an aqueous alkali silicate solution, in which the lightweight aggregate is bonded in a network fashion exclusively at the contact sites to obtain its essential properties.

2. Molded body according to Claim 1 or 2, characterized by the fact that the dry bulk density lies in the range from 150 to 750 kg/m^3.

3. Molded body according to Claim 1 or 2, characterized by the fact that the compressive strength lies in the range from 0.1 to 15 N/mm^2.

4. Molded body according to at least one of the Claims 1 to 3, characterized by the fact that the sintered product is formed from 93 to 80 wt% of lightweight aggregate and 7 to 20 wt% of water-soluble alkali silicates.

5. Molded body according to at least one of the Claims 1 to 4, characterized by the fact that the water-soluble silicate is chosen from alkali silicates, especially water glass, especially sodium water glass and potassium water glass.

6. Process for production of a molded body according to at least one of the Claims 1 to 5, characterized by the fact that the lightweight aggregate and the binder are subjected to a shaping process after mixing and sintered at 400°C to 1000°C over a period from 0.1 h to 5 h.

7. Process according to Claim 6, characterized by the fact that the dry bulk density and/or compressive strength is adjusted as a function of the lightweight aggregate and the process parameters during sintering.

8. Process according to Claim 6 or 7, characterized by the fact that drying at 50°C to 95°C is carried out after shaping and before sintering.

9. Process according to at least one of the Claims 6 to 8, characterized by the fact that the sintering process is conducted at 550 to 850°C.

10. Process according to at least one of the Claims 6 to 9, characterized by the fact that sintering occurs during a period from 0.1 h to 0.5 h.

11. Use of a molded bodies according to at least one of the Claims 1 to 5 as insulation molded bodies.

12. Use of the molded bodies according to at least one of the Claims 1 to 5 as construction material, especially as bricks.

13. Use of the molded bodies according to at least one of the Claims 1 to 5 as furnace lining.

14. Use of the molded bodies according to at least one of the Claims 1 to 5 as bricks for formation of exhaust installation.

15. Use of the molded bodies according to at least one of the Claims 1 to 5 for technical sound protection in interior rooms.

16. Use of the molded bodies according to at least one of the Claims 1 to 5 for sound-absorbing segments for fixed passageways of rail vehicles.

17. Use of the molded bodies according to at least one of the Claims 1 to 5 as fireproofing elements.

18. Use of the molded bodies according to at least one of the Claims 1 to 5 as sound absorbers in exhaust lines.